

Chapter 6: Solving Systems

Solving by Substitution 6.2 Day #2 WS

Name: _____

Period: _____

Date: _____

Solve the following systems by substitution.

- ✓ Remember that it is easiest to solve for variables without a coefficient (i.e. 1 or -1).
- ✓ Substitute (replace) into the other equation, so that only one variable is left.
- ✓ Do not forget to find both values and put your answer in the form of an ordered pair (x, y) .

1. $y = 6x - 11$
 $-2x - 3y = -7$

$(2, 1)$

$-2x - 3(6x - 11) = -7$

$-2x - 18x + 33 = -7$

$-20x = -40$

$x = 2$

$(2, 1)$

$y = 6(2) - 11$

$y = 1$

3. $y = -3x + 5$

$5x - 4y = -3$

$(1, 2)$

$5x - 4(-3x + 5) = -3$

$5x + 12x - 20 = -3$

$17x = 17$

$x = 1$

$y = -3(1) + 5$

$y = 2$

$(-3, -6)$

5. $-4x + y = 6$

$-5x - y = 21$

$y = 4x + 6$

$-5x - (4x + 6) = 21$

$-5x - 4x - 6 = 21$

$-9x = 27$

$x = -3$

$-5(-3) - y = 21$

$15 - y = 21$

$y = -6$

$(0, -2)$

7. $-5x + y = -2$

$-3x + 6y = -12$

$y = 5x - 2$

$-3x + 6(5x - 2) = -12$

$-3x + 30x - 12 = -12$

$27x = 0$

$x = 0$

$-5(0) + y = -2$

$y = -2$

2. $2x - 3y = -1$

$y = x - 1$

$(4, 3)$

$2x - 3(x - 1) = -1$

$2x - 3x + 3 = -1$

$-x = -4$

$x = 4$

$y = 4 - 1$

$y = 3$

$(4, 3)$

4. $-3x - 3y = 3$

$y = -5x - 17$

$(-4, 3)$

$-3x - 3(-5x - 17) = 3$

$-3x + 15x + 51 = 3$

$12x = -48$

$x = -4$

$y = -5(-4) - 17$

$y = 20 - 17 = 3$

$(-4, 3)$

6. $-7x - 2y = -13$

$x - 2y = 11$

$x = 2y + 11$

$(3, -4)$

$-7(2y + 11) - 2y = -13$

$-14y - 77 - 2y = -13$

$-16y = 64$

$y = -4$

$x - 2(-4) = 11$

$x + 8 = 11$

$x = 3$

8. $-3x + 3y = 4$

$-x + y = 3$

$-2x + y = 3$

$y = 2x + 3$

$(-\frac{5}{3}, \frac{4}{3})$

$-3x + 3(2x + 3) = 4$

$-3x + 6x + 9 = 4$

$3x + 9 = 4$

$3x = -5$

$x = -\frac{5}{3}$

$-\left(-\frac{5}{3}\right) + y = 3$

$\frac{5}{3} + y = 3$

$y = \frac{4}{3}$

"What Disney movie is about a stupid boyfriend?"

Solve the systems of equations using the substitution method.
The answer to each problem will match a letter that will allow you to figure out the joke.

1. $2x + 3y = 10$
 $y = -x + 2$

$2x + 3(-x + 2) = 10$
 $2x - 3x + 6 = 10$
 $-x = 4$
 $x = -4$

$y = -(-4) + 2$
 $y = 6$ $(-4, 6)$

U. (1,2) 2
O. (-5,0)

2. $x = 4y - 7$
 $3x = 2y - 1$

$3(4y - 7) = 2y - 1$
 $12y - 21 = 2y - 1$
 $10y - 21 = -1$
 $10y = 20$
 $y = 2$

$x = 4(2) - 7$
 $x = 1$

B. (7,21) 3
W. (0,0)

3. $4x - y = 7$
 $y = 3x$

$4x - (3x) = 7$
 $x = 7$
 $y = 3(7) = 21$

$(7, 21)$

D. (-2,-3) 8
A. (-1,1) 4

4. $5y - 6 = x$
 $y = -x$

$5(-x) - 6 = x$
 $-5x - 6 = x$
 $-6 = 6x$
 $x = -1$
 $y = 1$

$(-1, 1)$

Y. (-1,4)
E. (-4,6) 1

5. $x - 2y = 1$
 $y = x + 2$

$x - 2(x + 2) = 1$
 $x - 2x - 4 = 1$
 $-x - 4 = 1$
 $-x = 5$
 $x = -5$
 $y = -5 + 2 = -3$

$(-5, -3)$

M. (-5,-3)
I. (7,3)

6. $x = -2y + 6$
 $3x - 18 = -6y$

$3(-2y + 6) - 18 = -6y$
 $-6y + 18 - 18 = -6y$
 $-6y = -6y$
TRUE

U. No Solution 7
N. (-4,5)

7. $6x - 2y = 7$
 $y - 3x = -6$
 $y = 3x - 6$

$6x - 2(3x - 6) = 7$
 $6x - 6x + 12 = 7$
 $12 = 7$
FALSE

NO SOLUTION

S. (-3,2)
B. All real numbers on the line: $y = \frac{-1}{2}x + 3$ 6

8. $x - 7y = 19$
 $5x = -2y - 16$

$x = 7y + 19$
 $5(7y + 19) = -2y - 16$
 $35y + 95 = -2y - 16$
 $37y = -111$
 $y = -3$

$x - 7(-3) = 19$
 $x + 21 = 19$
 $x = -2$

$(-2, -3)$

V. (2,2)
F. (-3,13)

D U M B B E A U
8 2 5 6 3 1 4 7